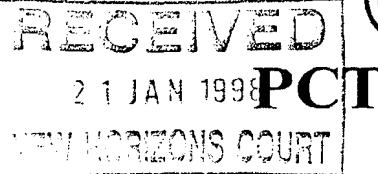


## PATENT COOPERATION TREATY

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NOTIFICATION OF TRANSMITTAL OF  
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EXAMINATION REPORT

(PCT Rule 71.1)

Date of mailing  
(day/month/year)

19. 11. 98

Applicant's or agent's file reference

AMD/C70237

## IMPORTANT NOTIFICATION

International application No.

PCT/EP 96/04807

International filing date (day/month/year)

04/11/1996

Priority date (day/month/year)

03/11/1995

Applicant

SMITHKLINE BEECHAM P.L.C. et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

## 4. REMINDER

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## PCT


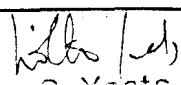
### INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>AMD/C70237</b>	<div style="display: flex; justify-content: space-between;"> <span><b>FOR FURTHER ACTION</b></span> <span>See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)</span> </div>	
International application No. <b>PCT/EP 96/ 04807</b>	International filing date ( <i>day/month/year</i> ) <b>04/11/1996</b>	Priority date ( <i>day/month/year</i> ) <b>03/11/1995</b>
International Patent Classification (IPC) or national classification and IPC <b>C12N15/82</b>		
Applicant <b>SMITHKLINE BEECHAM P.L.C. et al.</b>		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This **REPORT** consists of a total of 3 sheets, including this cover sheet.  
  
☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).  
 These annexes consists of a total of 2 sheets.

3. This report contains indications and corresponding pages relating to the following items:
  - I ☒ Basis of the report
  - II ☐ Priority
  - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
  - IV ☐ Lack of unity of invention
  - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
  - VI ☐ Certain documents cited
  - VII ☐ Certain defects in the international application
  - VIII ☐ Certain observations on the international application

Date of submission of the demand <b>27/05/1997</b>	Date of completion of this report <b>19. 01. 98</b>
Name and mailing address of the IPEA/   <b>European Patent Office</b> D-80298 Munich Tel. (+49-89) 2399-0, Tx: 523656 epmu d Fax: (+49-89) 2399-4465	Authorized officer  <b>S. Yeats</b>  Telephone No.

**INTERNATIONAL PRELIMINARY EXAMINATION REPORT****I. Basis of the report**

1. This report has been drawn up on the basis of (Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.):

☐ the international application as originally filed.

☒ the description, pages 1-50 \_\_\_\_\_, as originally filed,  
pages \_\_\_\_\_, filed with the demand,  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_,  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_,

☒ the claims, Nos. \_\_\_\_\_, as originally filed,  
Nos. \_\_\_\_\_, as amended under Article 19,  
Nos. \_\_\_\_\_, filed with the demand,  
Nos. 1-16 \_\_\_\_\_, filed with the letter of 8.8.1997,  
Nos. \_\_\_\_\_, filed with the letter of \_\_\_\_\_,

☒ the drawings, sheets/fig 1-10 \_\_\_\_\_, as originally filed,  
sheets/fig \_\_\_\_\_, filed with the demand,  
sheets/fig \_\_\_\_\_, filed with the letter of \_\_\_\_\_,  
sheets/fig \_\_\_\_\_, filed with the letter of \_\_\_\_\_.

2. The amendments have resulted in the cancellation of:

☐ the description, pages \_\_\_\_\_.  
☐ the claims, Nos. \_\_\_\_\_.  
☐ the drawings, sheets/fig \_\_\_\_\_.

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

**INTERNATIONAL PRELIMINARY EXAMINATION REPORT**

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement

**1. STATEMENT**

Novelty (N)	Claims 1-16 _____	YES
	Claims _____	NO
Inventive Step (IS)	Claims 1-16 _____	YES
	Claims _____	NO
Industrial Applicability (IA)	Claims 1-16 _____	YES
	Claims _____	NO

**2. CITATIONS AND EXPLANATIONS**

1. The claims relate to a process for isolating a promoter functional in transgenic blackcurrant and other non-climacteric fruit, to the promoters thus isolated, to their use, to cDNA corresponding to the genes from which the promoters are derived, to the proteins encoded by the cDNA, and to vectors, cells and plants containing the promoters or cDNA. This subject-matter is novel with regard to the cited documents. It is further regarded as inventive since the available prior art does not disclose or render obvious any blackcurrant-derived promoters.

## CLAIMS

1. A process for isolating a promoter capable of driving fruit-specific expression of DNA sequences in transgenic blackcurrant and other non-climacteric fruit comprising
  - a) isolating mRNA from ripening blackcurrant fruit
  - b) preparing a cDNA library from the isolated mRNA
  - c) differentially screening the library from b) to identify genes expressed during the ripening periodand
  - d) screening a genomic library with probes prepared from cDNA identified according to c)
  - e) to isolate the corresponding gene and its promoter region.
2. A promoter capable of driving fruit-specific expression of DNA sequences in transgenic blackcurrant and other non-climacteric fruit obtainable by the process of claim 1.
3. A promoter according to claim 2 which comprises the sequence of nucleic acid bases in Figure 9 or IDSEQ 11 (the RIB1 gene promoter) or IDSEQ 14 (the RIB 7 gene promoter)..
4. Promoter DNA sequences which hybridise to the DNA of claim 3 under conditions of high stringency.
5. cDNA for genes which exhibit differential expression in fruit during the ripening period of fruit development selected from pRIB1 (IDSEQ 1), pRIB3 (IDSEQ 3), pRIB5 (IDSEQ 5), pRIB6 (IDSEQ 7) and pRIB7 (IDSEQ 9).
6. DNA encoding the RIB1 or RIB 7 gene.
7. A vector comprising the DNA as claimed in any one of claims 2 to 6.

8. Use of a promoter according to claim 2,3 or 4 to control the expression of one or more genes in climacteric or non-climacteric fruit.
9. Use according to claim 8 wherein the non-climacteric fruit is blackcurrant.
10. Use of a promoter according to claim 2,3 or 4 in the transformation of plant cells.
11. Plant cells and plants transformed using a promoter according to claims 2,3 or 4 or a vector according to claim 7.
12. Plants comprising cells according to claim 11 and descendants thereof.
13. Plants and seeds according to claim 12 which are blackcurrants.
14. Use of the plants or seeds of claims 12 or 13 in the manufacture of fruit products.
15. A process according to claim 1 wherein the method for extracting nucleic acid from blackcurrant fruit comprises homogenising by pulping blackcurrant fruit in a buffer containing insoluble polyvinylpolypyrrolidone.
16. Proteins encoded by the DNA sequences of claims 5 or 6.

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International Bureau

## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>6</sup> :</b> <b>C12N 15/82, 5/10, A01H 5/00, C07K 14/415</b>		<b>A1</b>	<b>(11) International Publication Number:</b> <b>WO 97/17452</b>
			<b>(43) International Publication Date:</b> 15 May 1997 (15.05.97)
<b>(21) International Application Number:</b> PCT/EP96/04807		<b>(81) Designated States:</b> AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).	
<b>(22) International Filing Date:</b> 4 November 1996 (04.11.96)		<b>Published</b> <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>	
<b>(30) Priority Data:</b> 9522558.7                      3 November 1995 (03.11.95)                      GB			
<b>(71) Applicant (for all designated States except US):</b> SMITHKLINE BEECHAM PLC [GB/GB]; New Horizons Court, Brentford, Middlesex TW8 9EP (GB).			
<b>(72) Inventors; and</b> <b>(75) Inventors/Applicants (for US only):</b> WOODHEAD, Mary, Rose [GB/GB]; Scottish Crop Research Institute, Invergowrie, Dundee DD2 5DA (GB). TAYLOR, Mark, Andrew [GB/GB]; Scottish Crop Research Institute, Invergowrie, Dundee DD2 5DA (GB). BRENNAN, Rex, Michael [GB/GB]; Scottish Crop Research Institute, Invergowrie, Dundee DD2 5DA (GB).			
<b>(74) Agent:</b> DENHOLM, Anna, Marie; SmithKline Beecham, Corporate Intellectual Property, Two New Horizons Court, Brentford, Middlesex TW8 9EP (GB).			
<b>(54) Title:</b> BLACKCURRANT PROMOTERS AND GENES			
<b>(57) Abstract</b>  Promoters and a process for isolating a promoter capable of driving fruit-specific expression of DNA sequences in transgenic blackcurrant and other non-climacteric fruit.			

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GA	Gabon			VN	Viet Nam



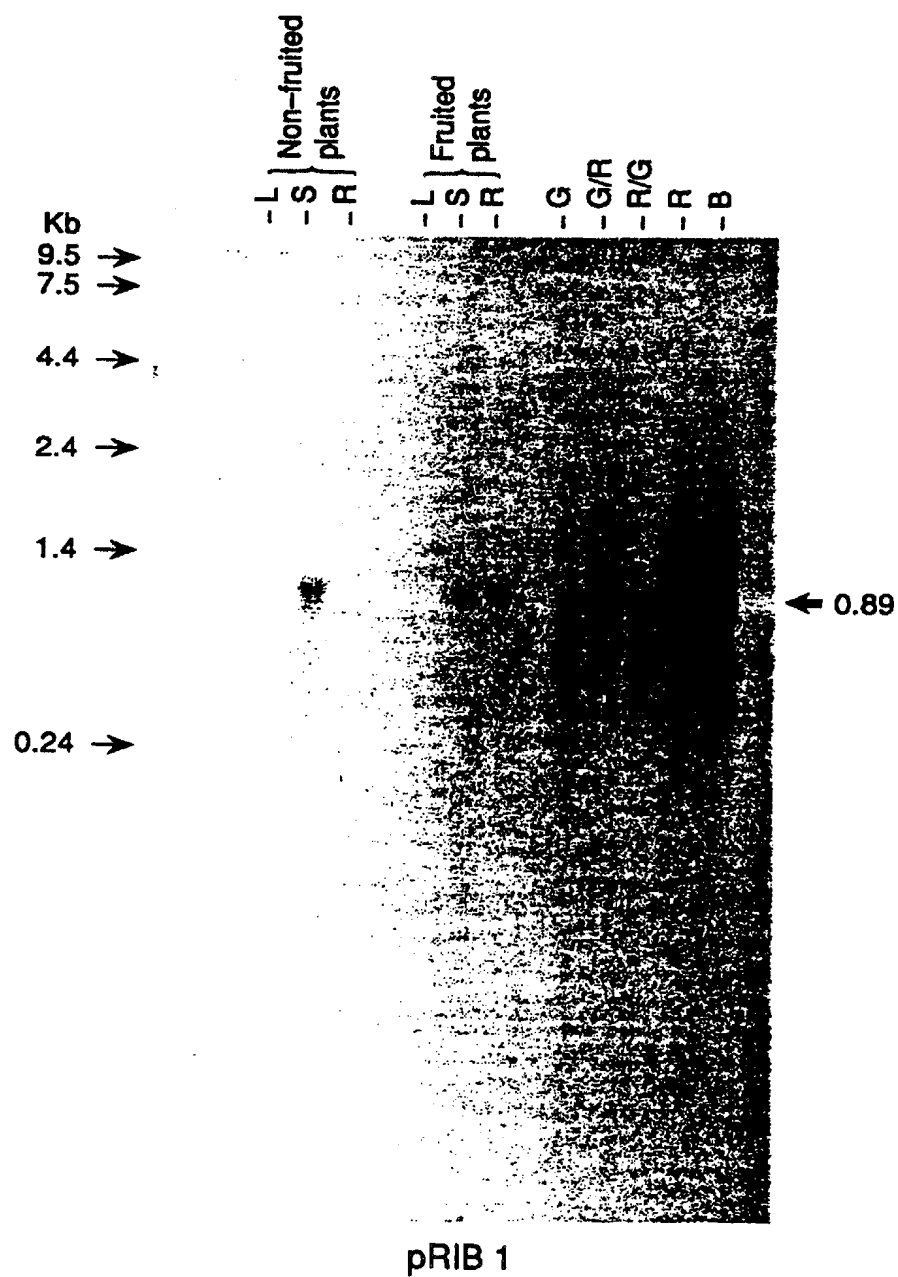


Figure 1

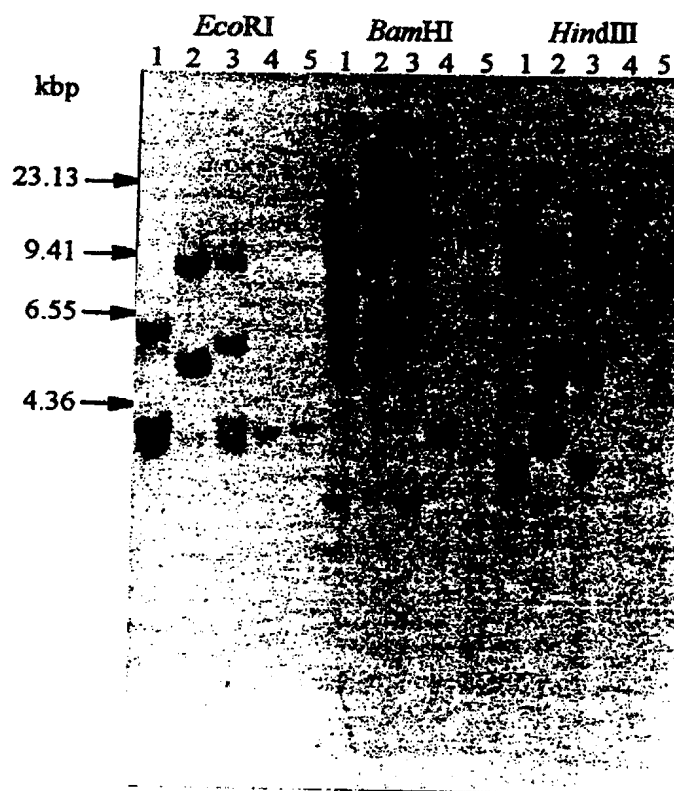


Figure 2

1 CAGCATTCCA AGAGGAAAAA AAACATGATC AAGAAGTAAT TACTACAAAA  
51 GAGGAAGCTG TAGTAGTAAC TGCACCACCA CCATCAGAAA CAGCAGAGCC  
101 AGCTGCAGCT GTTGTGCGG AGGAAGAGAC AACAAAGGAG CAAGAAGAGC  
151 CGCCAGCAGT ATCGGCCGAG GAACCTGTGG CCCCAGCTGA AGTAGAGACA  
201 AAGGTGGAAG TTACAGAAGA ACCACCAAAA GTTGAGGAGA AACCAGCAGA  
251 AGTAGAGGAG GCTCCAAAGG AAACAGTAGA AACAGAACCA GCTGTTGAGA  
301 AGACCATCAA GGAGGAACT GTAGAGGACT CTGTCGTGGC ACCTGCTCCC  
351 GAACCGGAAG CCGAAGTCCC AAAAGAGAAG GTAATTGCTA CTACTGAAAC  
401 TACTGAGGAA GAAGAAAAAG TGGCAGTTGA AGAAGTTGAA GTGAAAGTTG  
451 AAACAGAGGA GGGAGAAGTT ACTGAGGAGA AGACTGAGTA AAATAAGTTG  
501 TACAACATTT TTATGCACGC CTTATTTTCT CAATTGGAAG TTTATAATGT  
551 AGTGGGCTTT TGGTAATATT TGGGGGTTTA ATAAGTGGTT TAAGTGGGTT  
601 AAGGCTTTTT TGAATTTAG ATATTTGGGT AAAGGCCTAC TTGAACAAAA  
651 CATAGAAATT TGGCACACAT GGGTAAAAGT CAACTTTGT TGAGGATGTT  
701 TTCTTGTTGG TTAAATGTGT GTGCCAAGTA GTAGAATGTG GTGGTTGTAA  
751 TGTAAGTTCT CAAGTAGGGT TTATGAGTCC TAGTATTATG CTTGATTGTA  
801 TGTGATATG AAAATGGGGG TATGTTGGCT TTGAATAAAA GTTTTTAATT  
851 TTATAAAAAA AAAAAAAAAA AAAAAAAAAA AA

Figure 3

1 AFQEEKKHDQ EVITTKEEAV VVTAPPPSET AEPAAVVAE EETTKEQEEP  
51 PAVSAEEPVA PAEVETKVEV TEEPPKVEEK PAEVVEAPKE TVETEPAVEK  
101 TIKEETVEDS VVAPAPEPEA EVPKEKVIAT TETTEEEKV AVEEVEVKVE  
151 TEEGEVTEEK TE

Figure 4

1 AAACAACAAACTTTTTTCATCAATCTTCTTTCTTTAATCATCACCATGTCGAGCTGCGGAA 60  
T T N F F I N L L S L I I T M S S C G N

61 ACTGCGACTGTGCCGACAAGACCAACTGCCCAAAGAAGGGAAACAGCTACGGCTTTGACA 120  
C D C A D K T N C P K K G N S Y G F D I

121 TCATTGAGACCCAGAAGAGCTACGATGACGTCGTGGTGATGGATGTTTCAGGCAGCTGAGA 180  
I E T Q K S Y D D V V V M D V Q A A E N

181 ATGATGGCAAGTGCAAGTGCGGGCCCGAGCTGCAGTTGTGTGGGCTGCAGCTGTGGTCATT 240  
D G K C K C G P S C S C V G C S C G H \*

241 AAGTTAAACACAACATTATCATGTTATAGTGAATAATGATGTGTGTGATGAATATAGGTG 300  
301 AAAAATCTGTGGTGTGATAAAAACCGTTGGTGAATAAATAGGTGTATATTTTCGTGTGCAC 360  
361 CTTCTACGAGTACTTGTGCTTGTGGGTGAAAGAAATATGCACCTAAGTGTGAGTTGTTT 420  
421 TCCGTGTTTTTCGCCGTGTCCCTTGTAATGGTCATGTTTGTGTTTTCTGTGGTTAAATT 480  
481 AAATGAACTAGTAATGTTATGTAAAAA 519

Figure 5

1 GGAGGAGATCACCAGTTCACCAACACGTCGTCGTAATGAGACACGGCGATCGGATAGAC 60  
R R S P V P P T R R R N E T R R S D R Q

61 AACTTCGAGCCACTGTGGGTGAAGACGGCGGCGAACGATGGGACCCACCCTTGGTCGATG 120  
L R A T V G E D G G E R W D P P L V D E

121 AAGGCAAGCTCCGTACCTTCCGGACAGGTCTGAAGCTCCGAACCAATTTTGTATTTTCCGA 180  
G K L R T F R T G L K L R T N F D F P I

181 TCCATCGTGTCTTTGTATCACCTTTCCTCCGGTGCCTACAGACAGCATCGGAAGTCATCT 240  
H R V F V S P F L R C V Q T A S E V I S

241 CCGCTCTCTGCGCCGTCGACGATATTCCCGCCACCACTAATAGAGGCGATCAAGTACAAA 300  
A L C A V D D I P A T T N R G D Q V Q I

301 TCGATCCATCCAAGATCAAGGTCTCTATTGAGTATGGATTATGTGAAATGTTGAACATGC 360  
D P S K I K V S I E Y G L C E M L N M Q

361 AAGCCATAAGACTTGGTATGGATTTTTCAGCAATGGGAATTGGGGTTTCGATAAATCACACC 420  
A I R L G M D F S N G N W G F D K S H L

421 TTGAATCAACATTCCAGTTGGGACGGTGGATCATAGTGTGGAACCACTCTATAAAGAGA 480  
E S T F P V G T V D H S V E P L Y K E M

481 TGCCAAAATGGGAAGAGACAGTCAATGGCGCAAGGGCCAGATATGAAGAGGTTATTTCAGG 540  
P K W E E T V N G A R A R Y E E V I Q A

541 CCCTAGCAGATAAATACCCACGGAGAAGCTTGTGCTTGTTACACATGGGGAAGGAGTTG 600  
L A D K Y P T E N L L L V T H G E G V G

601 GCGTTGCAGTTTCTGCCTTCATGAAGGATGTTACAGTGTACGAAGCCGATTATTGTGCCT 660  
V A V S A F M K D V T V Y E A D Y C A Y

661 ATACACACGCAAGAAGATCCATTGTCTTGGGCAAAAACCAAGTCATTTACTGCTGAAAAC 720  
T H A R R S I V L G K N Q S F T A E N F

721 TTGAAGTATTACCAAAACAAGGCCAAACTGGTGTGAGTTACGTCCTTGAACAGCATTGAT 780  
E V L P K Q G Q T G V S Y V L E Q H \*

781 GGAAGTGTATGACCTAATTGTGGCAGCCGATGATTACAGAAACAATTTCCACACCTTTTT 840  
841 TCTTTTTTCGGGCATTTCCTACATTTTATAATTAATTAGGCATTCTCATAGCTAAGGCT 900  
901 CATTGGATTACATCCCTACTTGTAAAGGAGACTTTGATTTGTTGCCTCCAAACAGAA 960  
961 CATATGTTGCTGTGTCCATCAGCTTTTTTAACTGGGATTTCTATTTTACAGTGTGTAA 1020  
1021 AAAAAAAAAAAAAAAAAAAAAAAAAAAAAA 1046

Figure 6

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1 GTTGATGGCAGATGTGACCAACTCAGGAAAAATGCCAGGGTTGTTGCAATTGATTCTTAC 60
  V D G R C D Q L R K N A R V V A I D S Y

61 GAAGATGTTCTTTGAACGATGAGAACGCATTGAAAAAGGCAGTGGCTAGTCAGCCTGTG 120
  E D V P L N D E N A L K K A V A S Q P V

121 CGCGTCGCCATTGAAGGAGGTGGCAGGGATTTCCAACTCTATCAATCAGGCGTCTTTACT 180
  R V A I E G G G R D F Q L Y Q S G V F T

181 GGATCATGTGGGACGGCCCTAGACCATGGTGTGGCTGCTGTTGGGTATGGCACAGAAAAAT 240
  G S C G T A L D H G V A A V G Y G T E N

241 GGTGTGGATTACTGGATTGTAAGGAACATCGGGGTGCAAGCTGGGAGAGAGCGGCTAC 300
  G V D Y W I V R N S W G A S W G E S G Y

301 ATCAGGATGGAACGTAATCTGGCAGGCACAGCTACGGGCAAATGTGGTATTGCAATGGAA 360
  I R M E R N L A G T A T G K C G I A M E

361 GCCTCTTACCCTATTAAGAAAGGCCAAAATCCCCCAAACCCAGGACCATCTCTCCATCT 420
  A S Y P I K K G Q N P P N P G P S P P S

421 CCAATAAAGACCTCCAACAGTTTTGTGACAATTACTATACCTTGGCTGAAAGCACCCTT 480
  P I K T S N S F V T I T I P W L K A P L

481 GCTGCTGTCTATTTGAGTTTGGCAGGTATTGCTTCGAGTGGGGATGTTGCCCACTCGAGG 540
  A A V Y L S L A G I A S S G D V A H S R

541 CTGCCACTTGCTGTGATGACCATTACAGTTGCTGCCCACATGAGTATCCCATCTGCAACC 600
  L P L A V M T I T V A A H M S I P S A T

601 TTAATGCAGGGACGTGTATGATGAGAAGGACAACCCATTGAGTGTGAAGGCATTGAAGCG 660
  L M Q G R V *

661 TACTCCCCTAAACCTCATTGGGCCTTTGGGAACCGTGGCAAGAGCAGCAGTGCTTAAGA 720
721 ACATTGTGTCATCTATACAGTGAAAGTAAAACGAGGATGAAAAGTTGTATCAGGCAGGGC 780
781 TTGATGATCTCCTCGGTTTTATAGTACCGCATACCCCTCATTCTCCATTAAGGTTCATATAC 840
841 ATATGGACGGTTTATCAAAGTTTATTCAGATGCTAATTATGTATATATCATTTCTCAGTC 900
901 TTTGTATTTTCAATTTTAACGAGAACATAAACAGATCGTTATCAGCTACCAATTTCCACTGT 960
961 AATCACGTTATCAATTATTTACTGGCCTCGCTGAAAAAAAAAAAAAAAAAAAAAAAAAAAA 1017

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Figure 7

1 CGGTTCAATCGCTGGATCAATCGAGCATATGGCGATGTATCCGTTGATACGCTTAAAC 60  
G S I A G S I E H M A M Y P V D T L K T

61 TCGCATACAGGCTATTGGGTCATGTTCCGGCTCAATCCGCCGGTCTCCGACAAGCCCTTGG 120  
R I Q A I G S C S A Q S A G L R Q A L G

121 GTCGATACTGAAAGTTGAAGGTCCCGCCGGACTTTACCGTGGCATTGGTGCAATGGGTCT 180  
S I L K V E G P A G L Y R G I G A M G L

181 CGGTGCAGGACCAGCTCACGCAGTGTATTTCTCCGTTTACGAGATGTGTAAGGAGACTTT 240  
G A G P A H A V Y F S V Y E M C K E T F

241 TTCTCATGGTGATCCGAGCAATTCGGGTGCGCACGCCGTTTCGGGGGTGTTTCGCGACGGT 300  
S H G D P S N S G A H A V S G V F A T V

301 GGCAAGCGACGCCGGTGATTACGCCGATGGATGTGGTGAAACAGAGGTTGCAGTTGCAGAG 360  
A S D A V I T P M D V V K Q R L Q L Q S

361 CAGTCCGTACAAGGGTGTGTTGATTGCGTGAGGAGGGTGTGGTAGAAGAAGGGATTGG 420  
S P Y K G V V D C V R R V L V E E G I G

421 CGCATTTTACGCATCTTATCGAACAACGTGGTCAATGATGCCCCGTTTACGCCCGTTCA 480  
A F Y A S Y R T T V V M N A P F T A V H

481 CTTCCGCCACATATGAAGCCACGAAGAAAGGGTGTGGAGGTGTCGCCGGAGACTGCGAA 540  
F A T Y E A T K K G L L E V S P E T A N

541 CGATGAGAATTTGTTAGTGCATGCTACTGCTGGTGCTGCTGCTGGAGCTTTGGCTGCAGT 600  
D E N L L V H A T A G A A A G A L A A V

601 AGTAACCACTCCACTAGATGTTGTCAAACTCAGTTGCAGTGCCAAGGTGTTTGCAGGATG 660  
V T T P L D V V K T Q L Q C Q G V C G C

661 CGACAGATTTTCTAGCAGTTCGATTTCAGGATGTTATAGGAAGCATAGTGAAGAAAAATGG 720  
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721 ATATGTCGGGTTAATGAGGGGGTGGATTCCAGAAATGCTATTTTCATGCTCCTGCTGCAGC 780  
Y V G L M R G W I P R M L F H A P A A A

781 AATCTGCTGGTCTACTTATGAAGCCTCCAAAACATTTCTTTCAAAAACCTCAATGAGAGCAA 840  
I C W S T Y E A S K T F F Q K L N E S N

841 TAGCAACAGCTCAGTTACCTAAGATTTTCATATGTTTTTGTGCTCTACTAGGCTTATCCA 900  
S N S S V T \*

901 AAATCATGTCGATTGGTTTTCACTTCACCACAGTTGCCATGAACAACCTCAAAGCATCGAAT 960  
961 TTTACATGTATATTATGCAATCTAGATGCTTCTTGATATTTATTTTATTTTCTTTTTC 1020  
1021 CAACTTTTGTAATTAGAATTAGCTACTATGGTTATGGCATGGAGTGTTTTATAATTGCTA 1080  
1081 ATATCATCGTATAAGCAATGCTATTTGAGAAATTGTGGTGTAAAGGTTAGAGTAATGTTAT 1140  
1141 TTGCACAAATCCACTTACATAGACCGCGGGACTCATTTAAAAAAAAAAAAAAAAAAAAA 1195

Figure 8



1 GAGTTTAT TGGGATTA AAGTTTAAA TTACTTATA TGTACTCTC KAA'AAATCA AGCTTTGAT CATATAATC GAAACCAAA'CA CAA'AAATTT  
 101 ATGAATTTCT TGTACTCTTT GTCTCTGTAC CAAATAGG ACACCAAAA AATTTCTTT TGTATTATAT TCGTTTTTTA TTTTTTTAAC GTTTTGTAT  
 201 TCAACATCA TATAAGTAG GGGGAATATT ATTGGACTC CTCGAAAAAC TTATGACATT GTATTACAC ATTGATGCA CAGAAGTTTT TGATGAAGTG  
 301 CCAATATCAA TCTTTTCTTA ATTGCTTTCAT AAGGGGHTT TTGTATTA AAGAAGAT AGGAAATTT AGCAAGAGT GCAATTATTGG GACTGGTATA  
 401 TATGACAAAG ATCTGACATG GCAAGGAAG AAGTGTGTC CTGAGTCAG TGTGTCCAT CTGTCAATAT TCTTCNAAG NGGTCCGCC ATCTCATAGA  
 501 TGAGNTTTAG AAGTGTGTT CCAACAAAATA ATATGACACA ACCGATCCAT GAAACCAATAA AAGCATGACA GGTGATCATT TCTTTCTATT TTTTCTCTC  
 601 AAGATAATAA TACCTATTAG TGTCTTTAAC ACCGGCTAA CTGTGCATTT GTGTCAATTT GTGTGCTTTT TATTGCCCCA TGTGTGCTTG AAGGAATAA  
 701 AAGGAAGAT CTTTTCTTG AACCATATG GAAACATTT CATTGAGCA CATNENGAG AGGATGGAG ATTGATGAG AGAATTGTA CAGTCTTCT  
 801 TTANTTGGTA TATGTAAATC ACTCAGAAAC AGTATACCA TATATGATC AATGTCAATG TCACAGAAA CTTACTACAC GAACACATTT CTTAAGATGC  
 901 ATGACCAAT CATACATAT AATATAGTGT TACGACATA AAGATCTTT ACTGTAAAT GCAATAGTC GTGACAGAAA CAAAACGCTG GATTCCCAAC  
 1001 CTAAAGAGG GTATATCTTT TATTATATA TCTACTTTTG ATATGACCA AACCTTGTGT CACCAACAT GTTCTAGTAG ATGATATATT GTTTGACTTG  
 1101 TGTGATGCA GAAATCTAT GAGACGSGCC ATTAGTTTTA GCGGATGTG ATTGGGTAT ATTGATGCA ATATAAGATA TATAAAGCTT GAACAAACA  
 1201 ATTCTCAAT AATTAAGT ATGATTAAT CTGCTTTCTAG ATGATTAAT AATGATTAAT ATATGCTTG ATGATTAAT ATATTTTAAA ATCTGTGGA  
 1301 AATACATGCA TTCTTTTCT TCGAAGCGAA ATTCCTTCT TCCAAACACC TTAAACAATG TAAATTCGT TAGTAAGATT AATTTGAAA TGAATACAA  
 1401 AGATGATTA AAGTGTGAG TACCTACTT ACCCACTGC ACAAACACA CAGCAGACA TCCAAAGTA GTATGATG TACACACATTT TGAAAAAATG  
 1501 ACCCTCATA TTTAGGCAC CTCTCTTGA AAAAGATTA CAACAATTT ACTCTATCA TTATTATAA ATATATGCA TAACCTATC TCGAATCCAC  
 1601 ACCATATATT TTACATATT GCGAAGCATG CTAAATTT CTGTATTTCA GTGAAATGT GTGTCAAT CCAAGATTC TCAATGSCC CTTCTCTCT  
 1701 CTCTCTCTCT CTCTCTCTCT CCTCTCTCTC TCTCTCTC ATCAACTGA GGGCTTAGG ACCCTATAT AAACCTCTCT CAATTGATCA TCTCTGCG

4 - Putative promoter sequence

Figure 9

1 GATCTTATATTGAGGATGCAAAGTTTCAAATTACCTGATATGTAACCTCTCAACAAAATCA 60  
61 AGCTTTTGATCATATAAATCGAAACCAACACACAATAATTATGAATTTCTTTGACTCTTT 120  
121 GTCTCTGTACCAAAATACGCACACCACAAAAAATCTTTTGTATTATATTGCTTTTTTA 180  
181 TTTTAAACGTTTTGGTATTCAAACATCATATAAGTAAGGGGAATATTATTGCGACTC 240  
241 CTCCAAAACTTATGACATTGTGATTACACATTTGAATGACAGAAGTTTTTGATGAAGTG 300  
301 CCAATATCAATCTTTTCTTAATTGCTTCATAAAGGGTGTTTTTGTAAATAAAAGAAAGAT 360  
361 AAGGAAATTTAGCAAGAAGTGCATTATTGGGACTGGTATATATGACAAGGATCTGACGTG 420  
421 GCAAAGAAAGAAAGTGGGTCTGAGTCAGGTGTGTCCCATCTSTCAATATTCTTCAAAG 480  
481 AGAGTCCACCATCTCATAGATGAGATTTAGAAAGTGGTTTCCACAAAAAATATGACACA 540  
541 ACCCATCCATGAACCAATAAAACATGACAGGTCTCATTTCTTTCTATTTTTTCTCTC 600  
601 AAGATAATAATACCTATTAGTGTCTTTAACACCGGCCTAACTTTGCATTTCTTGTCATT 660  
661 GGTGACTTTTTATTGCCCAATTGTGGCTTGAAGGAAATAAAAAGGAAAGCTTTTTCTTG 720  
721 AACCCATATGGAAGCAATTTCAATGAGAGAGATAGAGAGGAGGGATGGAGATTGGGGTGG 780  
781 AGAATTGATACGGATCTTCTTTAATTGGTATATGTAAATCACTCAGAAACACGTATACCA 840  
841 TATATGCATCAATGTCAATGTCACAGAAAACGTAACCTCACGAACACATTTCGTAACATGC 900  
901 ATGCACCAATCATACATTATAACATAGTGTTACGACAATAAAAGATCTTTAGTCGTAAGA 960  
961 GCATTAGCTCGTGACAAGAACAAAACGTTGGATTCCCAACCTAAAGAAAGGGTATATCTTT 1020  
1021 TATTCATATATCTACTTTTGATATGACCTAAACCTTGTGTCCCCACAATGTTTCAGTACG 1080  
1081 ATCGATAATTGTTTGACTTGTGTGGGATGAGAAAATGTATGAGACTGGCCATTAGTTTTTA 1140  
1141 GCCGGATGTGATTTGGGTATATTGATGACATATAAGATATATAAACTTGAACAAAACA 1200  
1201 ATTTCTCAACAAATTAACCTACAAGATAATCTCCCTTCAGATGATAAACTAAATGGTAGA 1260  
1261 ATATCCGTTGAGTACCCCAATAATTTAAATCTCCAGCAAATACTGTGATTCTTTTTCT 1320  
1321 TCGAAGCGAAATTCCTTCCTTCCAAACACCTTAACAAATGTAAATTCGTTAGTAAGATT 1380  
1381 AAATTTGAAATGATAACACAAGAGTGAATAAAGGTCAATGGTCACCTACTTACCCAACTGC 1440  
1441 ACAAAACACACAAGCACACATCCAAAAGTAGTAGTATGATTACACACATTTGAAAAAATG 1500  
1501 ACCTCCATTATTTAGCCACCTCTCTTGTA AAAAGATTACAAACAAATTACTCCTATCA 1560  
1561 TTATTATAAAAATAGTAGCATAACCTCATCTCCAATCCACACCATATATTTTACATTATT 1620  
1621 GCCAAACATGCTAAAAGCTTCTTGATTTCAGTGAAAATGTGGTGTCAAATCCCAAGATT 1680  
1681 TTCATGTGCCCT 1740  
1741 ATCAACTTGAGGGCTTTAGGACCTCTATATAAACCCTCTCTCAATTGATCATCTCTGCATC 1800  
1801 ACACTCTCAAGCATTCTTTCTCTCTACTTTCTTTTAGGTCAACTACACTTCCCTTTGAGT 1860  
1861 TTCCAATGGCCACTGTTGAGGTAAATCAAGTGATATATACATAAATTTTATTGAAAGAT 1920  
M A T V E  
1921 GATTGATTCAAAGAGAACCCTTTTGTGTTTTCTTTAATAAGATCCATGTATATGAAGTTT 1980  
1981 TAATGTTTCATGTTTTTTTATTTTTTGTAAATTTTTTTTAAATTTAGGCATTTTTGCAAT 2040  
2041 ATCCCATTTGTGAAAAGATCTGTTTTCTTTTGGAAAGAGATTAGAATTCGTTTCGTGTCGA 2100  
2101 TTCATCATGAAAATCAATCTGGGTCTAGCTTTAATTGTGCTGATCTTGACCGGACTGTTA 2160  
2161 GATGATTGTTTTATATGTAGGCCCAATAGAGAGTGATAGTATTTCCCGAAATAATACAAA 2220  
2221 TCCGAGCAAACCTATAATCCTCAATAGTAACCTTTGTAATCTCTAAATAATCAAAAAATAAT 2280  
2281 GCTTATTGGGGTGATTGGTGTGTTTGATGCAGGTTGTATCAGCGCAGACAGCATTCCAAG 2340  
V V S A Q T A F Q E  
2341 AGGAAAAAAACATGATCAAGAAGTAATTACTACAAAAGAGGAAGCTGTAGTAGTAACCTG 2400  
E K K H D Q E V I T T K E E A V V V T A  
2401 CACCACCACCATCAGAAACAGCAGAGCCAGCTGCAGCTGTTGTTGCGGAGGAAGAGACAA 2460  
P P P S E T A E P A A A V V A E E E T T  
2461 CAAAGGAGCAAGAAGAGCCGCCAGCAGTATCGGCCGAGGAACCTGTGGCCCCAGCTGAAG 2520  
K E Q E E P P A V S A E E P V A P A E V  
2521 TAGAGACAAAGGTGGAAGTTACAGAAGAACCACCAAAAGTTGAGGAGAAACCAGCAGAAG 2580  
E T K V E V T E E P P K V E E K P A E V  
2581 TAGAGGAGGCTCCAAAGGAAACAGTAGAAACAGAACCAAGCTGTTGAGAAGACCATCAAGG 2640  
E E A P K E T V E T E P A V E K T I K E

2641 AGGAAACTGTAGAGGACTCTGTCGTGGCACCTGCTCCCCGAACCGGAAGCCGAAGTCCCAA 2700  
E T V E D S V V A P A P E P E A E V P K  
2701 AAGAGAAGGTAATTGCTACTACTGAACTACTGAGGAAGAAGAAAAAGTGGCAGTTGAAG 2760  
E K V I A T T E T T E E E E K V A V E E  
2761 AAGTTGAAGTGAAAGTTGAAACAGAGGAGGGAGAAGTTACTGAGGAGAAGACTGAGTAAA 2820  
V E V K V E T E E G E V T E E K T E \*  
2821 ATAAGTTGTACAACTATTTTATGCACGCCTTATTTTCTCAATTGGAAGTTTATAATGTAG 2880  
2881 TGGGCTTTTGGTAATATTTGGGGGTTTAATAAGTGGTTTAAGTGGGTTAAGGCTTTTTTG 2940  
2941 GAATTTAGATATTTGGGTAAAGGCCTACTTGAACAAAACATAGAAATTTGGCACACATGG 3000  
3001 GTAAAAGTCAAACTTTGGTTGAGGATGTTTTCTTGTTGGTTAAATGTGTGTGCCAAGTAGT 3060  
3061 AGAATGTGGTGGTTGTAATGTAAGTTCTCAAGTAGGGTTTATGAGTCCTAGTATTATGCT 3120  
3121 TGATTGTATGTTGATATGAAAATGGGGGTATGTTGGCTTTGATATAAGTTTTTAATTTT 3180  
3181 ATATAATAAGTGTATTTTGTTTAATATCATTCTTTTATTCTCTCGGATCAACTACTGAT 3240  
3241 CATCGCCTTGGTAAGCTATTGCCTCACCAACTAGCTAATCGAACGCGAGCCC 3292

Figure 10

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP 96/04807

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 6 C12N15/82 C12N5/10 A01H5/00 C07K14/415

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 6 C12N A01H C07K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	PLANT CELL TISSUE ORGAN CULT., vol. 24, 1991, pages 91-95, XP000618648 J. GRAHAM AND R.J. MCNICOL: "Regeneration and transformation of Ribes" see the whole document. ---	1
A	WO 94 21794 A (ZENECA LTD.) 29 September 1994 see pages 2-8. -----	1

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

6 March 1997

Date of mailing of the international search report

25. 03. 97

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Authorized officer

Yeats, S

# INTERNATIONAL SEARCH REPORT

Information on patent family members

Int. Application No  
PCT/EP 96/04807

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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		CA 2158473 A	29-09-94
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		JP 8507923 T	27-08-96
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